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AN APPARATUS FOR HOLDING COVER-GLASSES.

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When sections of animal tissue are fastened to cover-glasses* in order to transfer them from one bath to another during the process of their preparation for mounting, there seems to be no reservoir in the list of histological apparatus that is well suited to their use. The ordinary solid watch-glass, crystallizing dish, etc., is objectionable, as the cover-glass falls at once to the bottom, from which it is removed with difficulty, and, again, when several specimens are being prepared at the same time they almost invariably run together in the form of *rouleaux*, the separation of which is attended with great danger to the sections. These difficulties have rendered this otherwise very convenient method of handling sections, when from their nature a support is necessary, so objectionable that the cover-glass is seldom used by histologists for this purpose. In order to eliminate these difficulties I have devised the following apparatus for holding the cover-glass during the hydration, staining, dehydration, etc., of the sections, which I have found to work admirably:

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*In fastening sections to cover-glasses care must be exercised in the choice of some method of fixation which will not leave a film on the cover that will be tinted to any degree by the stain used. I have had some trouble in this respect with the gelatine, albumen, and collodion processes when certain aniline dyes were subsequently employed.

A method which seems admirably adapted to this process of handling sections is the *paraffine-alcohol method* described by Dr. A. Canini in the *Archiv. f. Anat. u. Phys., Phys. Abth., 1883, p. 147.* It consists simply in placing the section on a cover-glass directly from the section knife and adding a few drops of dilute alcohol (60 to 70 per cent.). The cover is then placed in a paraffine oven at a temperature of about 50° C., where it remains until the alcohol is evaporated. This method was also highly recommended by Ogata in his work on the pancreas cell. It is applicable only to sections cut by the paraffine method.

I am indebted to Dr. Theobald Smith, of the Bureau of Animal Industry, Department of Agriculture, and Prof. W. H. Welch, of Johns Hopkins University, for valuable information concerning this method.

The apparatus consists simply of a "double dish"* 15 centimeters in diameter and 2.5 centimeters in depth, in which glass rods are arranged parallel to each other and separated by a distance of about 4 millimeters. The rods are about 5 millimeters in diameter. They are raised about 2 millimeters from the bottom of the dish and fastened only at the extremities, thus permitting of a free circulation of the liquids. The cover-glasses are placed on edge between the rods, against which they rest (Fig. 1). A reservoir of this size will hold, without crowding, thirty preparations on ¾-inch covers. It is desirable to have a reservoir for each of the liquids used. The cheapness with which they can be made does not render this objectionable.

The construction consists in procuring the desired number of "double dishes," a few feet of glass rod, and an ounce or two of liquid glass (silicate of soda) or a few feet of fine copper wire. The glass rod is easily broken, by the aid of a file, into pieces of the required length, which are fastened in their respective places by means of a few drops of the liquid glass. In order to raise them from the bottom of the dish a ring composed of the liquid glass is built up around the edge, upon which the ends of the rods can rest and upon which they are fastened. As the silicate of soda is soluble in water and dilute alcohol, it is necessary to dehydrate it after the rods are fixed, so as to render it insoluble. This can be done by heating the reservoir in an oven or hot-air chamber at a temperature of about 98° C. If the reservoir is to be used only for turpentine, absolute alcohol, etc., the drying of the silicate of soda in the air is sufficient.

Instead of fastening the rods in the dish they can be bound together by means of fine wire, preferably copper, in the form of mats, which answer every purpose and which can be removed at will if the dish is desired for other purposes. This is easily accomplished by running the wire around the ends of the rods after they have been cut the desired lengths. A shoulder-like projection can be procured on the ends of the rods by heating them until soft and pressing them against a firm surface. These prevent the wire from slipping off, and also raise the rods from the bottom of the dish (Fig. 3).

With a full set of these reservoirs thirty cover-glasses can be carried from the first to the last liquid quite as quickly as a single preparation, for the time necessarily required for the action of the various reagents on a single specimen can be profitably employed in transferring other preparations. The cover-glasses can be handled very quickly, neatly, and with perfect safety with a pair of fine forceps.

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*A description of this and other forms of "double dishes" can be found in catalogues of bacteriological apparatus. A considerable variety is given in Lautenschläger's catalogue (1889 , p. 139. The cost of a dish the size described here is 0.90 mark (22½ cents). The catalogue can be procured from Eimer & Amend, New York.

Fig 1

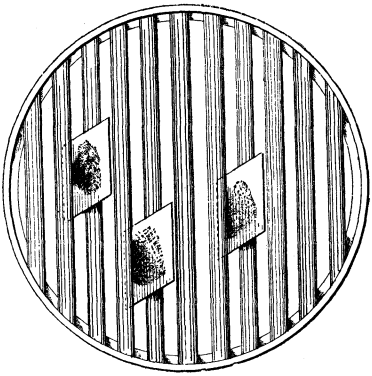


Fig 2

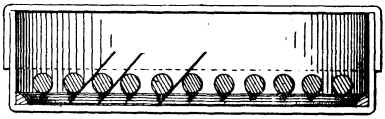
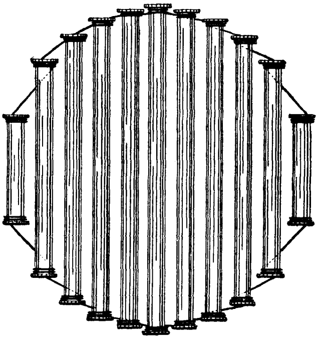


Fig. 3



Description of Plate.

Fig. 1.—The bottom of the reservoir as seen from above, with cover-glasses in position.

Fig. 2.—Cross-section of reservoir.

Fig. 3.—A mat of glass rods.